221 Does the use of a telehealth system, (I-neb Insight Online) improve nebuliser adherence and reduce treatment times in children with cystic fibrosis?

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Aim: To compare self reported adherence and treatment times of nebulised therapy against objective data obtained via download from the patient's I-neb nebuliser collected at 3 monthly visits. To subsequently monitor the affect of enrolling patients on a new telehealth system designed to allow patients to obtain treatment related feedback.
Methodology: Patients using I-nebs on a daily basis were asked questions regarding their perceived adherence to therapy and length of treatments. Data downloaded from their I-nebs enabled comparisons to be made between reported and actual values. Consenting patients were then set up on a telehealth system (I-neb Insight Online) to monitor the affect on adherence and treatment times.
Results: Data was obtained for 15 patients. 6 patients self reports were within 10% of their actual adherence. 9 patients over reported their adherence (range 13–49%) with an average of 36%.
Reported versus actual treatment times were compared for 9 patients. 7 patients under estimated treatment times.
Patients that were subsequently enrolled onto Insight Online with <90% adherence improved adherence over the proceeding 4 weeks by an average of 22% (range 9–59%). 4 out of 5 patients who had excessive treatment times (>5 minutes) reduced treatment times by >90 seconds.
Conclusions: Patients self report of nebuliser adherence and treatment times can be inaccurate providing little motivation to improve. Early indicators suggest there is benefit providing treatment related feedback at home using a system like Insight Online for improving adherence and reducing treatment burden. This will allow patients and physiotherapists to set goals which can be closely monitored.

222 Real life timing and cleaning of inhalation therapy

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Advances in inhalation devices have resulted in greater efficiency in nebulisation times than jet nebulisers. Patients often comment on the complexity, time and cleaning of component parts.
Objectives: To evaluate nebuliser assembly, delivery and cleaning times for 3 systems used by adults with CF (PARI LC plus, eflow rapid, Ineb) and compliance with recommended manufacturer's cleaning and disinfection guidance.
Methods: 30 patients (n = 10 each device) were timed completing a single inhalation for nebuliser assembly, delivery and cleaning and audited against a recommended cleaning and disinfection checklist for their usual device in their own home. All consumables were <30 days old.

Table: Inhalation and cleaning results

	PARI LC plus n = 10	eFlow rapid n = 10	Ineb n = 10
Mean assembly & inhalation time, min:s (range)	9:52 (6:15–15:37)	6:26 (2:35–10:17)	5:12 (4:05–6:50)
Mean cleaning time, min:s (range)	1:26 (0:0–4:18)	1:12 (0:10–2:10)	2.01 (0:16–3:32)
Mean total time, min:s (range)	11:18 (6:35–19:55)	7:38 (3:52–10:47)	7:14 (5:36–10:22)
>50% recommended cleaning steps complete	70%	50%	80%
<50% recommended cleaning steps complete	30%	50%	20%
Disinfection as per manufacturer's guide	0%	50%	40%

Conclusion: This audit was completed in the home to represent 'real life'. Inhalation and assembly times were very similar for the eflow rapid and Ineb and quicker than the PARI LC plus. Immediate cleaning was brief but similar for all devices but adequate rinsing was often omitted. The majority of patients dried equipment correctly, however adherence to recommended disinfection procedures was variable and poor. Methods to address adherence and improve cleaning practice are required, as many drugs are still inhaled via nebulisers, despite the advent of dry powder inhalers which require minimal cleaning and have low inhalation times.

223 Nebulised meropenem: A review of one year outcome in an adult cystic fibrosis centre

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Background: Meropenem (Mero) is a broad spectrum carbapenem which has been used to treat a wide range of infections. It remains unlicensed in its nebulised form, but has shown to be well tolerated. (Carrolan 2012, Parker-Stafford 2011).
Objective: To evaluate tolerance and outcome of nebulised Mero over 1 year.
Methods: Records from March 2006-Jan 2012 of patients who had received nebulised Mero were examined for indications, demographics, sputum microbiology, lung function, tolerability and IV ABx days. Best FEV1% predicted and number of IV ABx days 1 year pre and post challenge were analysed.
Results: 39 patients median (range) age 29 (16–44) years with a predicted FEV1% = 35% (11–86). Chronically infected with B.cep (n = 18), Ps.A (n = 18) or non Ps.A (n = 3) and clinically unstable on standard maintenance nebulised antibiotic therapy.
31% (n = 13) discontinued Mero within 1 year; 8% (n = 3) due to subjective tightness and 3% (n = 1) dysgeusia. 10% (n = 4) died and 10% (n = 4) were transplanted. Of the remaining 69% (n = 26) continued for >1 year, other side effects included 31% (n = 12) improved expectoration 10% (n = 4) throat irritation/tightness, 10% (n = 4) teeth discoloration and 3% (n = 1) wheeze, none of which caused discontinuation. FEV1% predicted 1 year pre Mero = 46.5% (26–92), post = 42.0% (20–100). IV days 1 year pre Mero = 48.5 (0–132), post = 40.0 (0–193). There was no significant difference in lung function or IV days.
Conclusion: Nebulised Mero was commenced with patients within different sputum microbiological groups who were clinically declining despite conventional nebulised therapy. It was well tolerated by the majority and lung function remained stable on treatment.

224 Adherence to the administration of aerosolized promixin with the I-neb adaptive aerosol delivery (AAD) system, lung function and administration times in patients with cystic fibrosis (CF)

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Background: Daily and regular administration of prescribed therapies is crucial for patients' well-being. I-Neb Respironics® allows to record and analyze information about adherence and compliance thus ensuring an objective and reproducible evaluation.
Aim: To evaluate retrospectively the adherence to inhaled colistimethate sodium during the first year of use and the overall functioning of the I-neb system.
Methods: CF patients with *Pseudomonas aeruginosa* chronic infection aged 6 yrs or more were recruited from 3 Italian CF centers. All patients were treated through the I-neb system and had to be trained to its proper use.
Results: 41 patients analyzed (mean age 21.4, FEV1 75.5% pred., BMI 19.4) spent 115 minutes daily on physiotherapy. Treatment lasted 8.6 months with mean 496 administrations delivered in mean 5.6 minutes. Timing between administrations was 12.17 hrs, mean doses missing 2.5 and the incomplete or void dose was 0.9. Physiotherapy treatment burden and missed doses (r 0.8080, $p < 0.0001$), average duration and problems of incomplete or void doses (r 0.444, $p = 0.0038$) were found significantly correlated. In the pediatric population (n = 20) there was a significative correlation between age and treatment time (r −0.750, $p < 0.0001$) while adults showed a significative correlation between the treatment time and lung function (r −0.610, $p = 0.0015$). In patients treated continuously, time decreased from 6.9 to 4.7 minutes ($p = 0.009$).
Conclusions: I-neb device allowed patients to achieve good adherence to therapy in short administration time. Downloading data at a distance to early detect patients poorly trained, changes in adherence or technical issues might be challenging.